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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, BENNY T

ART UNIT

PAPER NUMBER

2817

DATE MAILED: 02/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE  
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CT

FILED DATE:

☒ This application has been examined ☒ Responsive to communication filed on 20 Feb 2004 ☐ This action is made final.

A shortened statutory period for response to this action is set to expire Three (3) month(s),        days from the date of this letter.  
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948.                  |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449.      | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474.     | 6. <input type="checkbox"/> _____   |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-27 are pending in the application.  
Of the above, claims \_\_\_\_\_ are withdrawn from consideration.
2. ☐ Claims \_\_\_\_\_ have been cancelled.
3. ☐ Claims \_\_\_\_\_ are allowed.
4. ☒ Claims 1-20; 21-23; 24-27 are rejected.
5. ☐ Claims \_\_\_\_\_ are objected to.
6. ☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on \_\_\_\_\_ Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on \_\_\_\_\_ has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed \_\_\_\_\_, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☒ been received ☐ not been received  
☐ been filed in parent application, serial no. \_\_\_\_\_, filed on \_\_\_\_\_
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

The disclosure is objected to because of the following informalities: At all occurrences throughout the specification, note that "parallel" should be correctly spelled -- parallel --. Page 3, line 19, note that the publication date of the cited publication needs to be provided. Page 6, line 21, and page 15, line 7, note that "said" should be rewritten as -- the --. Page 6, line 26, note that "the way they are" should be rephrased. Page 11, line 7; page 12, line 29; page 22, line 30, note that "respectively" should follow "modes are" and "200v", respectively -- ~~should follow modes" are and 200v respectively.~~ Page 13, line 18, and page 15, line 6, note that -- (V<sub>bias</sub>) -- and -- (V<sub>B</sub>) -- should follow the respective occurrence of "biasing voltage". Page 15, line 26, note that reference to "cf" is vague in meaning; line 32, note that reference to "same or different" needs clarification. Page 16, line 27, note that "thin here meaning" should be rephrased as -- the term thin means --. Page 17, line 3, and page 22, lines 1, 3, 11, note that it is unclear whether reference to "resistor" and "resistance" are correct characterizations? Page 18, line 11, note that "the real and imaginary parts" needs to be clearly identified in the graphs of figs. 7A, 7B, 7C; line 15, note that the intended figures need to be specified. Page 19, line 9, note that "13" should correctly be -- 13A --; line 16, note that "V<sub>0</sub>" should correctly be -- V<sub>B</sub> --. Page 20, note that the paragraph starting at line 11 should properly reference -- figure 9 --.

Appropriate correction is required.

The disclosure is objected to because of the following informalities: Note that in general all reference labels appearing in the drawing figures should be correspondingly

described in the specification, especially those reference labels unique to a particular drawing figure.

Appropriate correction is required.

The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

The attempt to incorporate subject matter into this application by reference to the IEEE publication at p. 13, ls 9-11, the Swedish patent application at p. 16, ls 8, 9, and the Swedish patent application at p. 21, l. 1, respectively is improper because it is unclear whether the respective citations is being used to incorporate by reference material essential to the understanding of the invention. Note that incorporation by reference to essential material can only be made with respect to U.S. patents.

Claims 5, 8, 23, 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Note that the recitation "a material with similar properties" is not adequately described in the specification as to what materials meet the "similar properties"

requirement to the degree necessary such that one skilled in the art would not have been able to make and use this aspect of the invention without resorting to undue experimentation.

Claims 5-15, 17, 20; 21-23, 24-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 5, 8, 23, 26, note that in view of the inadequately written description, the metes and bound of what materials are intended to be encompassed by the similar properties recitation.

In claims 6, 9, 10, 11, note that use of the terms "e.g." and "i.e." renders the scope of these claims a vague and indefinite. That is to say it would have been unclear whether the limitations following e.g. and i.e. would have been considered positive limitations in the respective claims.

In claim 7, note that it would have been unclear in what manner would the "common ground plane" and "second electrode" have been the same.

In claims 12, 23, 26, note that use of parenthetical terms renders the scope of the claims vague and indefinite as to whether the parenthetical limitations would have been construed as further positive limitations.

In claim 13, note that the claim is deemed vague and indefinite as to how the energy depends on the biasing voltage". Clarification is needed.

In claims 17, 20, 21, 24, 27, note that use of the term "it" should be rephrased to indicate the intended feature such as to provide a proper description.

In claims 23, 26, note that reference to "bulk or thin films" appear vague in meaning as to how these features relate to the apparatus.

In claim 27, note that "the ferroelectric substrates" lack strict antecedent basis (e.g. in claim 24).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 3, 4, 7, 8, 12, 13, 16-20, 21, 22 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Wikborg et al.

Wikborg et al (fig. 12) discloses a tunable resonating arrangement (70) comprising: input/output couplings (127, 128), at least ~~three~~<sup>fe</sup> dual mode resonators (121a, 121b, 121c) having a configuration corresponding to that in fig. 11b (i.e. square disk shape parallel plate resonators). The resonators can be arbitrarily characterized by a first resonator (e.g. 121b) comprised of a (e.g. thin film) dielectric substrate material sandwich by parallel conductive plates. The resonators can be further arbitrarily characterized by a second resonator (e.g. either 121a, or 121c) which also comprises a respective (e.g. thin film) dielectric material substrate sandwich by corresponding parallel conductive plates. Note that either second resonator has one conductive plate thereof connected to a bias terminal for receipt of a bias voltage. The other conductive

plate of the second resonator is arranged to be in common with the electrode of the first resonator and includes apertures (129) for coupling electromagnetic energy between the first and second resonators. As is evident from fig. 12, a DC biasing field would extend across the resonators. However, the DC biasing field would inherently have to terminate or be grounded at the respective conductive plate having apertures (129). Accordingly the resultant effect would have isolated the first resonator as a region where the applied DC biasing would have had no effect thereon (i.e. non-tunable) while the region of the second resonator would have been subjected to the DC bias field, thereby altering the characteristics of the ferroelectric (e.g. Ba, Sr,  $\text{TiO}_3$ , etc) substrate associated therewith and hence providing a tunable resonator. Note that since the tuning properties (e.g. center frequency, etc) of the second resonator can be affected, this inherently affects the degree of electromagnetic energy coupled between the first and second resonators. For example, if the DC biasing voltage narrows the frequency response of the second resonator then this affects the amount of band limited electromagnetic energy transferred to the first resonator.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 3, 12, 13, 17-19, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huang et al in view of Petrov et al (cited by applicants).

Huang et al (Fig. 2) discloses a tunable resonating arrangement comprising a first resonator (54) including a resonating rod (86) short circuited to floor (66) to thereby form a conventional one-quarter wavelength resonator. A second resonator (52) includes a circular disk shape dielectric resonating element (60) which is tunable through a tuning member (70). A common wall (56) electrically shields and separates the resonators (52, 54) and includes an aperture (80) through which a coupler (78) electrically couples resonators (52, 54). Note that the wall (56) by virtue of being electrically connected to floor (66) is placed at ground potential and hence functions as a "ground plane". Although not shown, the resonating apparatus inherently includes input/output coupling to receive input signals and provide filtered output signals. As evident from fig. 2, the first resonator (54) is non-tunable while the second resonator (52) is tunable. However, the tuning of the second resonator is not effected through a tunable ferroelectric substrate material.


Petrov et al discloses a tunable dielectric resonator within a hollow cavity in which tuning of the resonator is effected through a tunable ferroelectric (i.e. Ba, S Ti 08) element or substrate disposed relative to the dielectric resonator.

3 Accordingly, it would have been obvious in view of the references, taken as a whole, to have substituted the ferroelectric tuning element taught by Petrov et al in place of the mechanical tuning member (70) in Huang et al. Such a modification would have been considered an obvious substitution of art recognized tuning means usable with apparatuses from the same field of endeavor (i.e. dielectric resonators in cavities), thereby suggesting the obviousness of such a modification. Moreover, it should be noted that use of an electronic (i.e. ferroelectric) tuning element provides the advantageous benefit of faster tuning as compared to a mechanical tuning member, thereby further suggesting the obviousness of the combination. Furthermore, note that as an obvious consequence of the modification a change in the biasing voltage results in a change in the tuning characteristics in resonator (52) obviously would have affected the amount of electromagnetic energy transfer between the "first" and "second" resonators, as known to those of ordinary skill in the art.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (571)272-1764.

Lee/ds

02/12/05

  
**Benny T. Lee**  
**Primary Examiner**